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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,548	12/01/2000	Noboru Okada	OGW-0019	3094

23353 7590 08/09/2004

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EXAMINER	
KNABLE, GEOFFREY L	
ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 08/09/2004

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/726,548
Filing Date: December 01, 2000
Appellant(s): OKADA ET AL.

David T. Nikaido
Carl Schaukowitch
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 26, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows:

In the statement of the issues, the last patent (to Mukae et al.) was inadvertently omitted from the rejection statement.[1] The correct statement of the issue on appeal is thus as follows:

[1] It is clear, however, that appellants considered and addressed this reference as being included in the rejection since the Mukae et al. patent was specifically addressed within the arguments section of appellant's brief (e.g. note esp. the arguments at page 7, lines 1-7 of appellant's brief).

Whether claims 1, 4, 5 and 8 rejected under 35 U.S.C. 103(a) are unpatentable over Irie (US 4,468,267) taken with JP 59-93345 to Yokohama, Brown et al. (US 5,554,242), Laurent (US 4,963,207), EP 958,913 to Okada et al. and EP 624,456 to Krupp and optionally EP 875364 to Pirelli, and further in view of Nakahama et al. (US 4,369,086) and Brey et al. (US 3,849,231) and/or Mukae et al. (US 4,553,894).

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1, 4, 5 and 8 stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

US 4,468,267	Irie	8-1984
JP 59-93345[2]	Yokohama	5-1984
US 5,554,242	Brown et al.	9-1996
US 4,963,207	Laurent	10-1990
EP 958,913	Okada et al.	11-1999
EP 624,456[3]	Krupp	11-1994
EP 875,364	Pirelli	11-1998
US 4,369,086	Nakahama et al.	1-1983
US 3,849,231	Brey et al.	11-1974

[2] A translation for this reference is attached as an appendix to this Examiner's Answer.
[3] A translation for this reference is attached as an appendix to this Examiner's Answer.

US 4,553,894 Mukae et al. 11-1985

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1[4], 4, 5 and 8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Irie (US 4,468,267) taken with JP 59-93345 to Yokohama, Brown et al. (US 5,554,242), Laurent (US 4,963,207), EP 958,913 to Okada et al. and EP 624,456 to Krupp and optionally EP 875364 to Pirelli, and further in view of Nakahama et al. (US 4,369,086) and Brey et al. (US 3,849,231) and/or Mukae et al. (US 4,553,894).

Summary of the rejection:

In summary, in tire building, two-stage tire forming systems that include a band forming machine (i.e. first stage machine), a tire shaping/forming machine (i.e. second stage) and a belt/tread forming machine along with the accompanying servicers for the various layers/components are *extremely* well known in this art – the present claims are considered to merely combine known and desirable expedients in this art for each of the various building/supply stations *for only their expected advantages*, it being emphasized that in each case, it is apparent that one of the known advantages of these various known building/supplying sub-processes is the ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more (costly) storage of more different components). Thus, the ordinary artisan, desiring to

[4] It is noted for the record that although the various "means" in parts (1) to (6) of claim 1 use the phrase "means for," in each instance, the phrase "means for" is modified by sufficient structure, material or acts for achieving the specified function (e.g. "inner liner supply means..."), and as such, 35 U.S.C.112, sixth paragraph is not considered to have been invoked and has not been applied.

provide a flexible overall two-stage tire building system/process capable of building different tires (and with quick changeovers and reduced component storage), would have been motivated to provide a two-stage tire building system/method as claimed in which each of these known and desirable building/supplying devices are combined for their expected ability to improve adaptation to size changes.

Full statement of the rejection:

In tire building, two-stage tire forming systems/methods that include a band forming machine (i.e. first stage machine), a tire shaping/forming machine (i.e. second stage) and a belt/tread forming machine along with the accompanying servicers for the various layers/components are *extremely* well known in this art – Irie is merely exemplary. Claims 1 and 5 additionally require that for the band forming means, the inner liner and carcass ply suppliers be adapted to supply the layers having a width corresponding to the drum periphery (plus splice margin for the typical overlap splice) and cut to a length corresponding to the desired ply width. JP 59-93345 to Yokohama is also directed to supplying various tire plies to a cylindrical tire building drum and in particular, discloses supplying the layers parallel to the drum axis such that they have a width corresponding to the drum periphery and thus can be cut to a length that corresponds to the desired ply width, this being taught to avoid the need for stocking materials for the different sizes being applied as well as improving quality – note the abstract and figure. In other words, JP '345 is considered to suggest application of tire plies for building a tire band in the same manner as appellants tire inner liner and carcass ply to provide an ability to alter ply size by simply cutting to different length and

thereby avoid the need for stocking different ply sizes. In light of this teaching, to apply the carcass and liner in this manner and with such device in a typical two stage tire building scheme tire (rather than simply perpendicular to the building line) would thus have been obvious and would have provided an expected ability to alter components sizes (widths) by simply cutting to different length rather than needing a different stock material for each size/width desired.

Claims 1 and 5 also define band and tread rubber part supply means/process in the form of a device adapted to form and wind a rubber strip to a desired profile. In this art, however, it is extremely well known and established that direct strip winding of the various rubber parts of the tire, including those of the first stage tire band as well as the extremely well known strip winding of treads, is advantageous in terms of reducing the need for intermediate components production/storage (and all the problems associated therewith) as well as well as facilitating quick tire size/type changeover – note esp. cols. 1-2 of Brown as well as col. 2, lines 15-24 of Laurent. To provide band and tread rubber parts supply means for direct strip winding such components would therefore have been prima facie obvious and lead to only the expected results, i.e. the ability to avoid the need for production and storage of intermediate or "semi finished" components as well as providing an expected ability to facilitate quick tire size/type changeover. The normal and typical extrusion used in such processes is considered to read on the claimed use of an "injection unit" – in any event (and for claims 4 and 8), a piston or plunger type unit is also known and used in this art to apply precise quantities of rubber - note Laurent

(esp. col. 4, lines 3+ - note that this extruder uses a piston), use of such being therefore obvious to allow more precise rubber application.

Claims 1 and 5 also define that the belt supply process/means are formed by rubberizing strips which are spliced to form the belt and supplied to the belt forming machine – such processing is however known, desirable and obvious in this art as a known way to avoid the need for storage of plies for every tire size – note EP 958,913 to Okada et al. (esp. cols. 1-2 and fig. 1).

Claims 1 and 5 also broadly define (part "(4)") bead supply means/process for setting the beads – such means/process is however of course a necessary and typical feature of any tire band building system/process (e.g. note bead supplying/setting in fig. 8 of Irie).

As to the last two subparts of claims 1 and 5, the first of these parts require that the various means are operative to cooperate to form plural tires of different sizes yet the same inner diameter. However, it is apparent that one of the known advantages of the various prior art systems/processes described is the ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different components). A capability to build different tire sizes is thus implicit in or suggested by the systems taught by the references and further would have been an obvious desire of the ordinary artisan for only the expected results. EP '364 to Pirelli was cited as additional evidence showing that the ordinary artisan understands that adapting a given tire building line to build different tire sizes is known and desirable in this art (e.g. col. 6, lines 1-10) but is understood to typically provide

some expected increases in production costs due to the need to change components/processing (e.g. col. 2, lines 34-50). The applied prior art references each in essence are directed to processing for each of the various required parts of the tire building process that are each designed to more easily adapt to such changes and thus would tend to lower any cost penalties associated with changing tires being built. The ordinary artisan would thus have been particularly motivated to adopt or adapt known tire component supplying means that have known advantages in terms of components size change flexibility. Further, along these same lines, it is submitted that the ordinary artisan would have certainly been motivated to provide a capability to be able to control all the various building and supply means in a tire building line, particularly where it is desired to effect size changeovers on the same line, it being therefore obvious to provide a cooperative control ability as claimed. In other words, it is submitted that the ordinary artisan would have readily understood that cooperation among the various building and supplying stations in a tire building line is essential to an effective tire building process, the provision of such capability with any conventional multi-stage tire building operation being therefore obvious.

Further, the fact that the system is operative to only build different tires of the same bead diameter is also a system limitation that would have been readily apparent to the artisan employing the band supplying means teachings of JP '345, it being clear that since the width of the stock sheet is fixed, it is only the cut length thereof (which corresponds to the width direction on the drum) that can be altered to make different type/size tires – the advantage of eliminating the need to stock different width carcass

plies for making different tires is however still taught as an advantage of this system – note the abstract and the figure.

As to the last sub-part of claims 1 and 5, these lines defining specifics of the bead supply of plural kinds of beads, it is first noted that, given that again it is considered to be known and desirable to build different tire sizes/types on the same tire building line, it is considered that the ordinary artisan would have readily and certainly appreciated that different beads would likely be required and thus preparation thereof as well as a bead supply means that can hold the necessary various tire bead types would have been seen to have been necessary and obvious. In other words, if one is trying to build different tires on the same line, it would seem not beyond the skill level of the ordinary artisan to appreciate that provision of the requisite beads that will be needed would have been necessary and obvious. Further, since it is apparent that among the known advantages of the various known building/supplying sub-processes of the other references is the ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different components) when different tires are to be built, the artisan would have been particularly motivated to provide such in the context of a system that is designed to be able to easily build different tires with minimal changeover requirements. EP '456 to Krupp was cited to show that the artisan understands the need and desire to design a bead supply means that can easily adapt to changing bead sizes and thereby enables rapid size changes – note the abstract. While this device would provide added flexibility beyond what is needed in a system that is limited to only single bead inside diameters, it

is still clear evidence that the artisan is well aware of the need to adapt to differing beads. Nakahama et al., Brey et al. and Mukae et al. provide additional detail of the known devices and processes used to supply beads including the well-known use of storage means for a plurality of beads in the vicinity of the building line. Note also the indication in the background of Nakahama et al. that it is well known for the artisan to manually take a bead from a supply peg near the former and apply it to the bead setter (col. 1, lines 38+), it being apparent that at present the process claim 5 does not even distinguish manual selection/supply of the desired bead. In any event, the remainder of this reference as well as the other references clearly evidence the well known nature of employing various means to bring the bead to the bead setters from a supply rack/device, it again being considered that given that it is considered to be known and desirable to build different tire sizes/types on the same tire building line, the ordinary artisan would have readily appreciated that a bead supply means that holds various tire bead types would have been necessary and obvious. EP '456 to Krupp further provides evidence that the artisan knows how to design a bead supply means that can easily adapt to changing bead sizes and thereby enables rapid size changes – note the abstract. To provide a bead supply means that can hold/supply different beads would therefore have been obvious and lead to only the expected results when one desires to build different tire types with rapid changeover.

In summary, then, in tire building, two-stage tire forming systems that include a band forming machine (i.e. first stage machine), a tire shaping/forming machine (i.e. second stage) and a belt/tread forming machine along with the accompanying servicers

for the various layers/components are *extremely* well known in this art – the present claims are considered to merely combine known and desirable expedients in this art for each of the various building/supply stations *for only their expected advantages*, it being emphasized again that in each case, it is apparent that one of the known advantages of these various known building/supplying sub-processes is the ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different components). Thus, the ordinary artisan, desiring to provide a flexible overall two-stage tire building system/process capable of building different tires (and with quick changeovers and reduced component storage), would have been motivated to provide a two-stage tire building system/method as claimed in which each of these known and desirable building/supplying devices are combined for their expected ability to improve adaptation to size changes.

Put differently, the artisan is considered to have been well aware that in the building of tires, selection of lot size for any given production line represents a decision made, among other things, as a tradeoff between the desire to build smaller lots (and thereby enable the building of the tires to better correlate with stock needs) as balanced against the increased costs associated with changing a building line to build a different tire. The prior art teachings suggest processing that enables the ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different components). Such would therefore be expected to reduce the costs associated with changing from one type of tire to another and thereby make such changes (and thus smaller lot sizes) more economical. This

however is considered to represent only the expected results. The applied prior art thus suggests systems as claimed as well as indicates an understanding of the artisan that such systems provide an *ability to more easily adapt to changing size requirements for the components* (and thus also thereby avoid the need for more storage of more different components), such strongly motivating the artisan to adopt such systems, particularly where it is desired to build smaller lot sizes of different tires that would require typically costly changes in component sizes.

(11) Response to Argument

Appellant's urge that the prior art was designed to produce masses of tires of the same specification rather than use of large-scale production equipment to produce tires of a variety of specifications, each in limited quantity. This argument is unpersuasive. It should first be pointed out that the claims are not limited to any particular lot size but rather are directed to a process/system designed to build different tires on the same line. Further, the prior art is considered to in fact suggest sub-systems as claimed as well as indicate an understanding by the artisan that such systems provide an ability to *more easily adapt to changing size requirements for the components* (and thus also thereby avoid the (costly) need for more storage of more different components), such strongly motivating the artisan to adopt such systems, particularly where it is desired to build smaller lot sizes of different tires that would require typically costly changeovers for different component sizes. Note also again EP '364 to Pirelli which was cited as additional evidence showing that the artisan understands that adapting a given tire building line to build different tire sizes is known and desirable in this art (e.g. col. 6,

lines 1-10) but is understood to typically provide some expected increases in production costs due to the need to change components/processing (e.g. col. 2, lines 34-50). The applied prior art references each in essence are directed to processing for each of the various required parts of the tire building process that is designed to more easily adapt to such changes and thus would tend to lower any cost penalties associated with changing tires being built. Thus, while it would be agreed that it is generally most economical and typical to build all the same tire on a building line in large quantities, there is clearly also a known desire to be able to build various smaller lots of different tires on the same line - the prior art provides ample evidence that the claimed processing represents known and conventional processing at each stage of the tire building process, with one of the known advantages of these various known building/supplying sub-processes being the ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different components).

Put differently, the artisan is considered to have been well aware that in the building of tires, selection of lot size for any given production line represents a decision made, among other things, as a tradeoff between the desire to build smaller lots (and thereby enable the building of the tires to better correlate with stock needs) as balanced against the increased costs associated with changing a building line to build a different tire. The prior art teachings suggest processing that enables the ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different components). Such would therefore be

expected to reduce the costs associated with changing from one type of tire to another and thereby make such changes (and thus smaller lot sizes) more economical. This however is considered to represent only the expected results. Appellant's argument that the prior art does not show a production system that enables a small quantity to be built is thus unconvincing as the prior art does in fact suggest systems as claimed as well as indicates an understanding by the artisan that such systems provide an ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different components), such strongly motivating the artisan to adopt such systems, particularly where it is desired to build smaller lot sizes of different tire that would require typically costly changes in component sizes.

It is also argued at pages 7-10 of the brief that the motivation to combine the references is only found in the claimed invention and not the prior art. However, it is again submitted that the ordinary artisan, desiring to provide a flexible overall two-stage tire building system/process capable of building different tires (and with quick changeovers and reduced component storage), would have been motivated to provide a two-stage tire building system/method as claimed in which each of these known and desirable building/supplying devices are combined for their expected ability to improve adaptation to size changes. In other words, the prior art is considered to suggests sub-systems as claimed as well as indicate an understanding by the artisan that such systems provide an ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the need for more storage of more different

components), such strongly motivating the artisan to adopt such systems, particularly where it is desired to build smaller lot sizes of different tires that would require typically costly changes in component sizes.

It is argued at pages 11-12 of the brief that the examiner cannot ignore the results and advantages of the invention, namely that the prior art was designed to produce masses of tires of the same specification rather than use of large-scale production equipment to produce tires of a variety of specifications, each in limited quantity. These results/advantages however have not been ignored. However, they are considered to have represented only the expected results following the teachings of the references for the artisan motivated by a desired to provide a tire building system/method in which tire size change is eased. In other words, as amply noted above, the applied prior art is considered to suggest sub-systems as claimed as well as indicate an understanding by the artisan that such systems provide an ability to more easily adapt to changing size requirements for the components (and thus also thereby avoid the (costly) need for more storage of more different components), such strongly motivating the artisan to adopt such systems, particularly where it is desired to build smaller lot sizes of different tires that would require typically costly changes in component sizes.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Primary Examiner
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G. Knable
August 5, 2004

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Appendix